Health and Safety Element

Introduction

This Element addresses a wide range of issues related to human health and safety. The topics addressed here relate to the physical setting of the city, various human activities taking place in the area, and the appropriate response to a variety of potential situations that represent threats to people. The overall intent of this Element is to protect persons and their property by identifying potential hazards within the community, minimizing these potential risks whenever possible, and providing for appropriate and timely response in cases of catastrophic events. Potential risks are discussed under the following topic sections within this Element:

- Seismic and Geologic Hazards
- Flooding Hazards
- Fire Hazard
- Aircraft Related Hazards
- Hazardous Wastes and Materials
- Emergency Preparedness
- Noise

The Health and Safety Element is closely related to the Land Use Element, the Public Facilities and Services Element, and the Open Space, Conservation and Recreation Element. The hazards addressed in this Element provide constraints on development and create an additional need for public facilities and services.

Goal

The goal of the Health and Safety Element is:

Minimize the public's exposure to harmful impacts caused by hazards and noise.

Objectives, Policies and Programs

Geologic and Seismic Hazards

Objective HS 1
Minimize exposure of the community to hazards associated with seismic activity.

Policy HS 1.1
Existing buildings, structures, and walls within the City shall meet minimum seismic safety standards.

Policy HS 1.2
All new buildings, structures, and walls shall conform to the latest seismic and geologic safety structural standards of the California Building Code as a minimum standard.

Policy HS 1.3
Comply with the requirements of State law and the recommendations of a certified geotechnical consultant when determining setbacks from an active fault trace for new development.

Policy HS 1.4
Require detailed geologic studies by a Registered Geologist (RG), Certified Engineering Geologist (CEG), and/or Geotechnical Engineer for projects within areas of potential seismic activity. All studies prepared shall identify the location of all surface fault traces within 100 feet of any proposed structure and determine their relative activity. Adequate provisions for mitigation of potential hazards to human life or property shall also be included.

Policy HS 1.5
The City shall restrict the crossing of Alquist-Priolo Act Special Studies zones by new public and private transmission facilities, including power, water, sewer, gas, and oil lines. Owners of all existing transmission facilities which cross active faults shall be required to file an operations plan with the City describing

the probable effects of transmission line failure at the fault and various emergency facilities and procedures which exist to assure that failure does not threaten public safety.

Policy HS 1.6
In the event that a transmission facility crosses an Alquist-Priolo Act Special Study Zone, facility design shall include sufficient provisions for valves, switches and other appropriate equipment for minimizing adverse impacts to nearby development from fire, disruption of service, spillage, etc. as a result of fault displacement.

Policy HS 1.7
Any existing natural gas well which feeds pipelines crossing an Alquist-Priolo Act Special Study Zone shall be equipped with adequate emergency devices to shut off gas flows in the event of pipeline rupture due to fault displacement.

Policy HS 1.8
Any existing facility which is located within the boundary of a Special Study Zone and attracts large number of people, is open to the public, or provides essential community services, shall be investigated by a structural engineer for potential hazards to life and property due to fault displacement. Cost of such services shall be borne by the building owner. If hazards are identified, appropriate hazard mitigation actions, subject to City approval, shall be implemented.

Policy HS 1.9
The City should retain a Registered Geologist, Certified Engineering Geologist and/or Geotechnical Engineer to evaluate geologic reports required where seismic conditions warrant special attention. The cost of such services shall be borne by the applicant.

Policy HS 1.10
Geologists who conduct studies along the upper Cordelia Fault shall contact the California Division of Mines and Geology for early input prior to finalizing the status of this portion of the fault relative to the Alquist-Priolo Special Study Zone.

Objective HS 2
Minimize exposure of the community to geologic hazards associated with landslides and ground failure.

Policy HS 2.1
No critical structures such as utilities, communications facilities, hospitals, emergency relief facilities, high occupancy structures, and fire and police stations shall be located in areas of high ground failure potential.

Policy HS 2.2
Require soils and geologic studies by qualified professionals for development within Slope Stability Zone 2 identified on Exhibit HS-1.

Policy HS 2.3
Require detailed geologic studies and detailed mitigation measures for development projects located within Zone 3 and Zone 4 of Exhibit HS-1. Property insurance for development in Zone 3 and Zone 4 should be considered as a potential risk mitigation measure.

Policy HS 2.4
Development is discouraged on slopes in excess of twenty (20) percent and/or unstable soils.

Program HS 2.4 A
Require compliance with development standards in the Hillside Grading Ordinance. (See Program OS 6.4 B)

Policy HS 2.5
Require strict engineering standards for construction on soils subject to significant shrink/swell and areas of high ground failure potential.

Policy HS 2.6
Require strict engineering standards for development projects located in identified landslide prone areas.

Policy HS 2.7
Require a detailed geotechnical report, including borings, for projects involving construction on soils and substrate subject to potential liquefaction, and implement the recommendations of the report by making them condition of project approval.

Policy HS 2.8
Require an erosion control and rehabilitation plan to be prepared for projects requiring substantial groundbreaking activities to control short-term and long-term erosion and sedimentation in nearby streams and rivers.

Flooding Hazards

Objective HS 3
Minimize exposure of the community to flooding hazards by developing new flood control facilities as well as maintaining current facilities. (See Objective PF 8)

Policy HS 3.1
Work with other jurisdictions to ensure stability of dams at Madigan, Frey, and Curry Lakes where dam failure could result in property damage or personal risk. (See Policy PF 8.4)

Program HS 3.1 A
Uphold minimum Federal Emergency Management Administration (FEMA) standards for flood control facilities.

Policy HS 3.2
Require development within flood plain areas to comply with FEMA regulations by providing adequate flood mitigation and financial protection in the event of flooding. (See Policy PF 8.1)

Policy HS 3.3
Investigate potential for earthquake-induced liquefaction of Putah South Canal. Areas of special concern include where Putah South Canal crosses Ledgewood Creek on Suisun Valley Road in Solano County, where it crosses Laurel Creek in north Fairfield, and those portions of the canal constructed on landfill along the base of Cement Hill.

Program HS 3.3 A
A report prepared by a state-registered civil engineer detailing the results of an inspection of the applicable portions of the Putah South Canal shall accompany all projects involving human occupancy which fall within potential inundation proximity of the Putah South Canal. The reports shall include discussion of the reliability of the facility during a 100-year flood event, potential for landsliding, slumping and liquefaction, likely inundation area and any improvements necessary to mitigate identified hazards or risk.

Policy HS 3.4
Continue to update FEMA flood control studies based upon development and ongoing improvements. (See Program PF 9.4 A)

Policy HS 3.5
Development that interferes with channel capacity or causes erosion and siltation shall not be allowed.

Policy HS 3.6
The City should consider adopting road construction standards for areas designated as flood prone which allow for the passage of flood water under the road surface unless a diking effect is desired.

Fire Hazards

Objective HS 4
Protect people and property by minimizing levels of fire danger. (See Objective PF 15)

Policy HS 4.1
Prohibit residential development in areas of Extreme Wildfire Risk (represented on Exhibit HS-2).

Policy HS 4.2
Development projects in areas of High Wildfire Risk (see Exhibit HS-2) shall be reviewed by the Fire Chief to ensure that fire protection will not be excessively difficult or dangerous and that mitigation measures are included to minimize risk to acceptable levels.

Policy HS 4.3
Require landowners to maintain firebreaks around existing residences. Require greater buffer widths in areas of High and Extreme Wildfire Risk. Maintain buffer areas along all major roadways and around structures in areas of High Grassfire Risk identified on the Fire Hazards Map, Exhibit HS-3. (See Policy PF 15.2)

Policy HS 4.4
Maximum residential density for High Grassfire and High Wildfire Risk Areas shall be one dwelling unit per five acres unless appropriate mitigation measures are included to minimize risk to acceptable levels.

Policy HS 4.5
Ensure the ability to provide fire protection within areas of new development. (See Objective PF 15)

Program HS 4.5 A
Maintain the City water system at a pressure of 45-55 psi, with a goal of maintaining pressure at not less than 20 psi during fire fighting operations. (See Policy PF 5.6)

Program HS 4.5 B
Maintain adequate capacity within the City water system to support 1,000 gallons per minute usage from numerous fire hydrants in addition to normal domestic water service.

Policy HS 4.6
Require remote hillside developments to maintain sufficient water supplies on-site in the form of pools, ponds, or storage tanks for wildfire protection.

Policy HS 4.7
Avoid siting structures on hilltops and upper slopes in areas of high fire potential due to danger and difficulty of providing adequate fire protection.

Policy HS 4.8
Require mitigation for development in high fire potential areas, including site planning to reduce dangers, fire- resistant building materials and plantings adjacent to structures, and insurance requirements in the event of property damage.

Policy HS 4.9
Hillside development shall take into consideration the recommendations developed by the California Department of Forestry and Fire Protection in order to minimize the risk of loss due to wildfires.

Aircraft Related Hazards

Objective HS 5
Protect the safety of persons on the ground from aircraft crash hazard potential. (See Policy LU 13.3)

Policy HS 5.1
New development within Compatibility Zones A, B1, B2, C, D, and the Height Review Overlay Zone should comply with the basic and supporting Land Use Compatibility criteria shown in Chapter 2, including Table 2A, and all other applicable criteria of the Land Use Compatibility Plan (LUCP) for Travis AFB. New development within Compatibility Zones should comply with the Primary Compatibility Criteria shown in Table 2A of the Land Use Compatibility Plan for the Travis Aero Club.

Policy HS 5.2
Projects within the Travis AFB LUCP Area of Influence Compatibility Zones A, B1, B2, or C as shown on Exhibit HS-3 of the General Plan shall be referred to the Solano County Airport Land Use Commission (ALUC) as required by the Solano County Airport Land Use Compatibility Review Procedures. Projects that exceed the height limits specified in Table 2A of the LUCP for Travis AFB shall also be referred to the ALUC. Projects within the Travis Aero Club Compatibility Zones shall be referred to the Solano County ALUC as required by the Travis Aero Club Land Use Compatibility Plan.

Policy HS 5.3
If it is the determination of the ALUC that any of the mandatory projects referred to the ALUC are inconsistent with the LUCP for Travis AFB or the Land Use Compatibility Plan for Travis Aero Club, the City Council may hold a hearing to consider the project. The City Council may overrule the ALUC after the hearing by a two-thirds vote if it makes specific findings that the proposed action is consistent with the purposes of Airport Land Use Commission Law as contained in Article 3.5 of the Public Utilities Code.

Policy HS 5.4
The city should adopt an open land plan for the entire area within Compatibility Zones A and B north of Air Base Parkway, as defined in the Land Use Compatibility Plan for Travis Aero Club. Individual lots located within Compatibility Zone B south of Air Base Parkway shall include a minimum of 50 percent open land, as defined in the Land Use Compatibility Plan for Travis Aero Club.

Policy HS 5.5
The city will require, as a condition of approval of development within Compatibility Zone C of the Travis AFB LUCP, homebuyer notification regarding aircraft operational impacts on the property. Similarly, the city will require homebuyer notification of the of the proximity of Travis Aero Club and the characteristics of the airport's activity for all new residential development located within Compatibility Zone D of the Land Use Compatibility Plan for Travis Aero Club.

Policy HS 5.6
Nonconforming development or reconstruction within the Travis AFB LUCP Area of Influence shall be consistent with the policies in the LUCP regarding such development or reconstruction. Nonconforming development within Aero Club Zone B that is partially or fully destroyed shall comply with the City's replacement requirements for nonconforming structures and uses as contained in the City's Zoning Ordinance.

Objective HS 6
Protect the safety of aircraft in flight.

Policy HS 6.1
Objects and structures within Compatibility Zones A, B1, B2, C, D and the Height Overlay Zone for Travis AFB as shown in Exhibit HS-3 of the General Plan and objects and structures within the Compatibility Zones A, B, and C for the Travis Aero Club as shown in the Land Use Compatibility Plan for Travis Aero Club shall conform to FAR Part 77 height limits.

Hazardous Wastes and Materials

Objective HS 7
Minimize the risks associated with hazardous waste treatment, storage, disposal and transport to ensure that the residents of Fairfield and the surrounding environment are adequately protected. (See Objective PF 14)

Policy HS 7.1
Support the Solano County Hazardous Waste Management Plan (CHWMP) and the policies, objectives and programs contained therein to the extent that they are applicable to the City of Fairfield.

Program HS 7.1 A
Continue to implement the Household Hazardous Waste Disposal program, which allows City residents to properly dispose of household hazardous waste. (See Policy PF 14.1 and Program PF 14.1 A)

Policy HS 7.2
Annually review the Multi-Hazard Disaster Plan to ensure that the sections of the plan which address emergencies associated with the storage and transport of hazardous materials reflect current inter-agency response agreements and procedures.

Policy HS 7.3
Establish zoning standards for all industrial zoned areas, where hazardous waste treatment, transfer, storage and disposal facilities could be located, which are consistent with the adopted Siting Criteria outlined in the Solano CHWMP. (See Policy LU 13.2)

Policy HS 7.4
Involve the Fire Department and Solano County Department of Environmental Health in the review process for all projects located on commercial and industrial designated properties where potential for hazardous materials use has been identified so procedures for hazardous waste handling, treatment, storage or disposal can be implemented. (See Policy LU 13.2)

Policy HS 7.5
Continue to address potential concerns associated with the transport, storage, use and disposal of hazardous materials and waste through the environmental review process and minimize risk through the use of proper mitigation measures.

Policy HS 7.6
Through the project review process, require risk assessments for all commercial and industrial uses that store, use and produce hazardous materials and are adjacent to residential areas and immobile populations such as schools, hospitals, convalescent homes, prisons etc. Determine an adequate buffer between these uses. (See Policy LU 13.2)

Policy HS 7.7
During environmental document preparation for and before approval of any project within 0.5 mile of the boundaries of Travis Air Force Base, the City shall consult with the Travis AFB Environmental Cleanup Program, EPA, California Department of Toxic Substances Control, and the San Francisco Bay Regional Water Quality Control Board regarding continuing base contamination and remediation efforts. No projects shall be approved where there is substantial evidence of existing contamination that would pose an unacceptable risk to the health of future occupants of the project.

Emergency Preparedness

Objective HS 8
Provide for organized and timely relief efforts in the event of a major disaster and all other emergency situations within the Fairfield Planning Area. (See Objectives PF 15 and PF 16)

Policy HS 8.1
Provide secure shelter facilities with adequate supplies for displaced individuals.

Policy HS 8.2
Identify critical emergency facilities, including communication, medical, shelter, and transportation facilities, and human resources, and ensure their operation in the event of disaster.

Policy HS 8.3
Promote programs within the community that will improve emergency preparedness and public education, and prepare residents to respond to disaster situations.

Policy HS 8.4
Ensure that critical services will remain operable in the event of disaster. These services include water, communications, and utilities.

Policy HS 8.5
Annually review the Multi-hazard Disaster Plan to ensure that the plan provides the City with a comprehensive response plan for all disaster or emergency situations.

Noise

Objective HS 9
Protect the citizens of Fairfield from the harmful and annoying effects of excessive noise and protect the City's economic base by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.

Policy HS 9.1
Ground transportation noise: The compatibility of proposed projects with existing and future noise levels due to ground transportation noise sources shall be evaluated by comparison to Table HS-1 where the existing or future noise level from ground transportation noise sources is determined to exceed the standards of Table HS-1. Noise levels in outdoor activity areas and interior spaces shall be mitigated to the levels shown in Table HS-1.

Policy HS 9.2
Aircraft noise: All new land use proposals shall comply with the basic and supporting land use compatibility criteria of the Travis AFB Land Use Compatibility Plan (LUCP) and the Land Use Compatibility Plan for Travis Aero Club for aircraft-generated community noise. (See Policy LU 13.3)

Program HS 9.2 A
New residential zoning will not be applied on land where outdoor noise levels are greater than 60 dB CNEL maximum mission contour and/or within Compatibility Zones A, B1, B2 or C as indicated in Travis AFB Land Use Compatibility Plan. Should the LUCP become invalid or set aside, the protection zones and noise contours as shown in the 1995 AICUZ shall govern.

Program HS 9.2 B
New schools, day care centers, libraries, hospitals, or nursing homes shall not be located in Compatibility Zones A, B1, B2, or C as indicated in the 2002 Travis AFB Land Use Compatibility Plan.

Program HS 9.2 C
Office uses located with in Aero Club Zone B shall include a minimum interior Noise Level Reduction of 25 dBA.

Program HS 9.2 D
Residential uses located within Aero Club Zone C shall include a minimum interior Noise Level Reduction of 20 dBA.

Policy HS 9.3
Non-transportation noise: Noise created by new non-transportation noise sources shall be mitigated so as not to exceed the interior and exterior noise level standards of Table HS-2. Where proposed non-transportation noise sources are likely to produce noise levels exceeding the performance standards of Table HS-2, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy HS 9.4
Non-transportation noise: New development of noise sensitive land uses shall not be allowed where the noise level due to non-transportation noise sources will exceed the standards of Table HS-2. Where noise sensitive land uses are proposed in areas exposed to existing or projected exterior non-transportation noise levels exceeding the performance standards of Table HS-2, an acoustical analysis shall be required so that noise mitigation may be included in the project design.

Policy HS 9.5
All acoustical analyses required by the Noise Component of the Health and Safety Element shall:

- Be the responsibility of the applicant.
- Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
- Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.
- Estimate existing and projected (20 years) noise levels in terms of L_{dn} and/or the standards of Table HS-2, and compare those levels to the policies of this Element.
- Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of this Element. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance.
- Estimate noise exposure after the prescribed mitigation measures have been implemented.
- Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.

Policy HS 9.6
The City shall utilize procedures for project review and issuance of building permits to ensure that noise mitigation measures identified in an acoustical analysis are implemented in the project design.

Policy HS 9.7
The City shall require monitoring of compliance with the standards of the Noise Element after completion of projects where noise mitigation measures have been required.

Policy HS 9.8
The Police Department shall actively enforce the California Vehicle Code sections relating to adequate vehicle mufflers and modified exhaust systems.

Policy HS 9.9
The City shall purchase only newly acquired equipment and vehicles which comply with noise level performance standards based upon the best available noise reduction technology.

Policy HS 9.10
The City shall periodically review and update the Noise component of the Health and Safety Element to ensure that noise exposure information and policies are consistent with changing conditions within the community and with noise control regulations or policies enacted after the adoption of the Element.

Policy HS 9.11
The City shall require all development projects to mitigate noise impacts associated with construction activities.

Policy HS 9.12
The City shall enforce the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC).

TABLE HS-1
MAXIMUM ALLOWABLE NOISE EXPOSURE TO GROUND TRANSPORTATION NOISE SOURCES

	Outdoor Activity Areas[a]	Interior Spaces	
Land Use	L_{dn}/CNEL, dB	L_{dn}/CNEL, dB	L_{eq}, dB[b]
Residential	60[c]	45	--
Transient lodging	60[c]	45	--
Hospitals, nursing homes	60[c]	45	--
Theaters, auditoriums, music halls	--	--	35
Churches, meeting halls	60[c]	--	40
Office buildings	--	--	45
Schools, libraries, museums	--	--	45
Playgrounds, neighborhood parks	70	--	--

Note: -- = not applicable.

[a] Where the location of outdoor activity areas is unknown, the exterior noise-level standard shall be applied to the property line of the receiving land use.

[b] As determined for a typical worst-case hour during periods of use.

[c] Where it is not possible to reduce noise in outdoor activity areas to 60 db L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise-level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Brown-Buntin Associates 1991.

TABLE HS-2
NOISE-LEVEL PERFORMANCE STANDARDS FOR NEW PROJECTS AFFECTED BY OR INCLUDING NONTRANSPORTATION SOURCES

Land Use	Noise-Level Descriptor	Exterior Noise-Level Standard (Applicable at Property Line) Daytime (7 a.m. to 10 p.m.)	Exterior Noise-Level Standard (Applicable at Property Line) Nighttime (10 p.m. to 7 a.m.)	Interior Noise-Level Standard Daytime (7 a.m. to 10 p.m.)	Interior Noise-Level Standard Nighttime (10 p.m. to 7 a.m.)
Residential	L_{eq}	50	45	40	35
	L_{max}	70	65	60	55
Transient lodging, hospitals, nursing homes	L_{eq}	--	--	40	35
	L_{max}	--	--	60	55
Theaters, auditoriums, music halls	L_{eq}	--	--	35	35
Churches, meeting halls	L_{eq}	--	--	40	40
Office buildings	L_{eq}	--	--	45	--
Schools, libraries, museums	L_{eq}	--	--	45	--
Playgrounds, parks	L_{eq}	65	--	--	--

Notes: Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or recurring impulsive noises. These noise-level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwelling

Supporting Text

In many cases there are existing documents in addition to the General Plan that will guide the community's response to hazardous conditions. In such cases this Element seeks to support these programs and assist in their implementation. Major additional policy documents concerning health and safety issues are identified below:

- **Alquist-Priolo Act:** This act sets guidelines for development in areas adjacent to faults known to be active. The Alquist-Priolo Act of 1971 defines "active" faults as well-defined features that show geologic or historic evidence of activity in the past 11,000 years. In general, no habitable structures are allowed within 50 feet of an active fault. Prior to developing land in a Special Study Zone, detailed geologic studies are required to locate and assess any active fault tracers.

- **Solano County Comprehensive Airport Land Use Compatibility Plan (ALUCP):** Developed by Solano County, this report seeks to minimize conflicts between urban land uses and air base operations.

- **Solano County Hazardous Waste Management Plan (CHWMP):** Developed under state mandated guidelines, the Solano CHWMP will address hazardous waste management issues through the year 2000.

- **Multi-Hazards Disaster Plan:** This plan, developed by the City of Fairfield, addresses responses to events ranging from earthquakes and flooding relief to nuclear catastrophe.

Seismic and Geologic Hazards

The City of Fairfield is located along the eastern edge of the seismically active Coast Ranges of California. The Bay Area contains numerous near-parallel active faults. Active faults within the Bay Area include the Green Valley and Cordelia faults near Fairfield. (See Exhibit HS-1.)

Most large earthquakes in the Bay Area have occurred along the major faults, including the San Andreas, Hayward, and Calaveras faults, which are located 20 to 45 miles west and south of Fairfield. The largest recorded earthquake in the Fairfield area occurred on April 19, 1892 with a large aftershock on April 21, 1892 with an estimated magnitude range of 6.0 to 6.5.

Buildings most at risk from a medium to large earthquake are un-reinforced concrete and masonry buildings constructed before the 1940's. Older houses

(pre-1940) are sometimes not bolted down to their foundations and may slide off their foundations, causing significant damage. Buried pipelines may be damaged during ground shaking, especially pipelines in soft ground and pipelines which make a sudden transition between very firm and relatively soft ground.

Soil/Slope Stability Hazards

Expansive soils are a common source of moderate damage to houses and light structures in the Bay Area. Clay-rich topsoil with a high shrink-swell potential is common on the hillsides and valleys of the Fairfield Planning Area. Damage to structures, such as cracking of foundations, may result from repetition of the shrink-swell cycle.

Landsliding and debris-flow hazards exist to various degrees in all of the hillside areas around Fairfield. The immediate cause of a landslide is usually excess water due to heavy rainfall or channelized water flows. In the more unstable hillside areas very large, probably ancient, landslides are common. Old landslides may be reactivated or new landslides may be caused by poorly designed grading or by concentrated runoff from new development in or near ancient landslide deposits.

A common cause of damaging landslides in the Bay Area is improper grading within hillside developments. These landslides are often expensive to repair due to their proximity to buildings and developed areas. Future development pressures may lead to increased hillside development, and additional landslide damage of this nature can be expected.

Landslide Susceptibility

The hill and valley regions of the planning area have been divided into four general slope stability zones, which are identified on the Geological Hazards Map (Exhibit HS-1). A brief description of the four zones follows:

Zone 1 Areas of 0 to 5 percent slope, which are not underlain by known landslides. This zone is generally limited to the near level alluvial valleys. For the most part, soil stability is not a limiting factor in Zone 1.

Zone 2 Slopes of 5 percent or greater which generally contain few, usually small landslides. The landslides are often concentrated in relatively small areas. This zone is mapped in the generally resistant rocks of the Sonoma Volcanics. Soil stability must be considered in Zone 2, although it is not generally a major concern and engineering solutions will solve most problems.

Zone 3 Slopes of 5 percent or steeper which contain occasional to moderate numbers of landslides. The landslides are often concentrated in relatively small areas. Slope stability can be a major concern in parts of Zone 3. Site design and engineering will be strongly influenced by site conditions in Zone 3.

Zone 4 Slopes of 5 percent or greater, which contain many to very many landslides. This Zone is mapped in the gentle, rolling hills west of Interstate 680 which are generally composed of Markley Sandstone. Slope stability is the major concern in Zone 4 and severely limits all developments. Any development in Zone 4 will require very careful design considerations. Large-scale developments should be strongly discouraged in Zone 4.

Flooding Hazards

The potential for flood damage in the Fairfield area has increased with urbanization over recent years. Five streams which periodically overflow in the Fairfield area are Ledgewood, Pennsylvania Avenue, Union Avenue, Laurel, and McCoy creeks. In the lower reaches of this creek system, flood hazards are intensified by high tides that result in restricted drainage.

The Federal Emergency Management Association (FEMA) prepares and updates 100-year flood maps. The flood map is intended to identify areas with a 1% chance of flooding in any given year. Sites within the flood areas should be considered to be at higher risk than sites outside of the areas, although all sites within the 100-year flood zone should not experience flooding at the same time. Existing and future drainage improvements should reduce the risk of flooding. It is also possible for flooding to occur outside of the designated flood areas.

The majority of flood-prone lands in the Fairfield Planning Area are downstream lands which are subject to inundation during heavy rainfall along Suisun Valley, Dan Wilson, and Green Valley Creeks. The major cause of flooding in southern Fairfield and in the Cordelia area is the low lying nature of the land and the associated effects of high tides.

Fairfield Vicinity Streams Project

The City of Fairfield, in conjunction with the U.S. Army Corps of Engineers, has completed the Fairfield Streams Flood Control Project. The project consists of modifications to Ledgewood, Laurel and McCoy Creeks and the diversion of three creeks - Pennsylvania Avenue Creek into Ledgewood Creek, Union Avenue Creek into Laurel Creek and Laurel Creek into McCoy Creek.

Dam Failure

The Office of Emergency Services has compiled a list of 19 dams existing in Solano County. Dams with the potential to cause property damage, injury, or loss of human life in the Fairfield Planning Area are found at Lake Curry, Lake Frey, and Lake Madigan.

Canal Failure

Putah South Canal has the potential for earthquake-induced flooding due to slumping, landslides, and liquefaction. If a large landslide were to block or rupture the canal during a period of high flow, flooding would occur before repairs could be made. Canal crossings at Ledgewood Creek on Suisun Valley Road and at Laurel Creek north of Fairfield are specific areas where liquefaction could occur.

Fire Hazard

Rural/Hillside Areas Fire Potential

Significant portions of the foothill watershed areas surrounding Fairfield are threatened with wildfire risk, and these areas present a dangerous combination of factors. Hazards related to wildfire include risk of personal injury and property damage as well as the danger fire fighters must face to combat fires. For these reasons, development in areas subject to wildfire is strongly discouraged.

Factors contributing to risk of fire include dense and fire-prone vegetation, wind funneling effects of steep topography, poor access for fire-fighting equipment, lack of adequate water pressure and service at fire-prone elevations, and seasonal atmospheric conditions (warm, dry seasons and strong afternoon winds). Three fire potential zones are identified on the Fire Hazards Map (Exhibit HS-2). Brief descriptions of these zones follow.

Extreme Wildfire Risk Areas are those lands where severe burning conditions prevails (chaparral and heavy woodland, steep slopes, poor access, winds). This includes hilly areas to the west and northwest of Fairfield, the Cement Hill area, the hills above Green Valley and the hills above Interstate 80 and 680 just south of Cordelia.

High Wildfire Risk Areas are those lands where high potential for burning prevails due to mixed woodland-grassland, grassland, steep slopes, poor access, and winds. Areas of high fire risk are intermixed within areas of extreme fire risk.

High Grassfire Risk Areas are areas which have a high ignition potential in combination with periodic high winds. Fire risk is significant here, although not as severe as the mountainous wildfire risk areas.

The risk of fire danger must be carefully considered when reviewing plans for residential development in the rural hillsides surrounding Fairfield.

Urban Fire Potential

Urban fires represent a greater threat of property damage and personal injury than rural fires for several reasons. The urban fire most commonly involves structures, and therefore has greater damage potential than rural fires. There is also a greater risk of vehicle fires in the urban setting due to the greater number of vehicles present. Within the urban setting, there is also a greater risk of conflagration, an uncontrollable fire, involving structures. Such a fire could destroy whole areas of the City, leading to greater loss of life and property.

Urban fire also present a greater risk of releasing toxic fumes due to materials used for industrial processes and manufacturing, as well as potentially toxic products being stored for future retail sales. The industrial and manufacturing processes themselves can be the cause of fire due to the volatile chemicals used or the nature of the manufacturing process. For these reasons, such industrial land uses are incompatible with residential land uses and shall require adequate buffer areas to avoid land use conflicts.

In order to respond to an emergency situation, high-density portions of development projects should be located away from the center of the development and adjacent to a major arterial roadway. In addition, no development project should rely on a single entry/exit road. Rather, multiple entrance and exit roads should be provided to ensure emergency vehicle access.

Among the greatest risk situations existing within the City of Fairfield are the shingle roofs common among older homes. The City requires roofs on new homes and any replacement roofs to be of fire resistant materials, but until all older roofs are replaced they will present an added fire hazard.

Please refer to the Public Facilities Element for additional discussion of fire protection facilities and services.

Aircraft Related Hazards

Travis Air Force Base (AFB) is the only airport facility in Fairfield and is the largest airport facility in Solano County. It has been used by the Department of Defense for military operations since the early 1940's and is home of the world's largest military airlift unit. The six different aircraft assigned to Travis perform approximately 170 daily operations.

The aircraft operations of Travis AFB pose potential crash hazards to persons and property in the vicinity of the facility. Conversely, the development and use of property in the vicinity of Travis AFB may create hazards for aircraft approaching or departing the facility.

To address these concerns, the Solano County Airport Land Use Commission (ALUC) adopted the Land Use Compatibility Plan (LUCP) for Travis AFB on June 13, 2002. The LUCP contains criteria and policies related to the compatibility of the Travis AFB facility and surrounding land uses.

Exhibit HS-3 shows the LUCP's Referral Area and five Compatibility Zones: A, BI, B2, C, D and the Height Review Overlay Zone.

- Compatibility Zone A is the most critical safety zone. These clear zones are located at the ends and along the sides of the runways immediately below the initial take-off and final approach flight paths and are exposed to the greatest potential for aircraft accidents.
- Compatibility Zones B1 and B2 are also within the initial take-off and final approach flight paths but are less critical than the Compatibility Zone A. Significant danger due to the potential for aircraft accidents still exists.
- The C Zone encompasses the general area around TAFB. This area is subject to issues of aircraft noise, risks to people on the ground, and airspace protection.
- The D Zone encompasses most of central Fairfield. It must be kept clear of flight path obstructions and hazards to flight. Limitations on the height of structures are the only compatibility factors within this zone.
- The Height Overlay Zone covers locations where the terrain exceeds or comes within 35 feet oft any of the airspace protection surfaces for Travis AFB. This zone overlays portions of the other compatibility zones.

Should the ALUCP become invalid or be set aside, the protection zones as shown in Air Installation Compatible Use Zone (AICUZ) shall govern.

Also contained in the LUCP are Land Use Compatibility policies and criteria. These policies and criteria categorize specific land uses and their appropriateness in each of the Compatibility Zones above.

Travis Aero Club is located on the northwestern corner of Travis AFB. The facility consists of a 2,000-foot runway, parallel taxiway, aircraft apron for sixteen airplanes, and two buildings. Use of the Aero Club is limited; the airport is open only to Aero Club members, Travis AFB military and civilian personnel who have their own aircraft, and other users who obtain prior permission to land. On March 13, 1997, the Solano County ALUC adopted the Land Use Compatibility Plan for

Travis Aero Club. The Land Use Compatibility Plan contains policies related to the compatibility of the Aero Club facility and surrounding land uses.

Hazardous Materials and Waste Management

State law has directed all counties to prepare a plan for the management of hazardous wastes. Solano County has prepared a Hazardous Waste Management Plan (CHWMP), which was adopted on August 31, 1989. The Solano CHWMP provides for environmentally sound management of all hazardous wasted projected to be generated in Solano County through the year 2000. The State Department of Health Services (DHS) is the agency responsible for administering and overseeing the hazardous waste management process; it has approved the County's plan.

The Solano CHWMP was prepared for the purpose of complying with federal and state laws that mandate an improvement in the management of hazardous wastes; to assist in expediting the land-use permitting process for new treatment, storage and disposal facilities; and to assist in identifying California's hazardous waste management needs. Data from the Solano CHWMP will be incorporated into the state HWMP.

To comply with provisions of state hazardous waste management law, the City chose to adopt the applicable portions of the CHWMP. The sitting criteria, policies, objectives and programs have been incorporated by reference into the General Plan. Those portions of the CHWMP that affect the City of Fairfield will be addressed, while those portions which are not relevant will not be incorporated.

Siting Criteria

Solano County adopted a modified version of the DHS siting criteria for locating hazardous waste treatment, storage and disposal facilities. DHS criteria are grouped into four categories: location, hazard potential, public safety and physical site limitations. The criteria are used to determine suitable locations for two general types of facilities, Transfer/Storage/Treatment Facilities and Residual Repositories (disposal sites). Where applicable, maps were prepared to assist in the determination.

Solano County modifications to DHS criteria relate to the distance from residences and immobile populations, the siting of facilities on prime agricultural lands and the definition of appropriate zoning. Of primary importance to the City is that the modified criteria require a minimum 2000-foot buffer area between disposal sites and residences and immobile populations, which include schools, hospitals, convalescent homes, prisons etc. In addition, a risk assessment must be prepared that considers the type of waste, the design features of the facility, and the adequacy of the 2000-foot buffer. The County's requirements are more stringent than those required by DHS.

Solano CHWMP Policies, Objectives and Programs

The Solano CHWMP identifies seventeen policy areas. The policies, objectives and programs contained within the Solano CHWMP direct the County to create certain conditions and/or undertake various hazardous waste management actions. Cities within the county are also identified as participants within several of the policies and programs.

The CHWMP policies are written both to function independently and in concert with each other. The first policy promotes source reduction and on-site waste reduction as the preferred hazardous waste strategy. Other policies promote the establishment of a comprehensive education program to increase awareness of hazardous waste issues, provide an adequate and convenient means for disposal of hazardous wastes, encourage development of sufficient and necessary facility capacity for treatment transfer and disposal of hazardous wastes, encourage multi-county and regional efforts to plan for hazardous waste management through fair share agreements, promote programs that prevent emergency incidents and respond to accidental and illegal discharge of hazardous materials, and ensure that contaminated sites are identified and that aggressive and timely remedial action is taken.

Hazardous Materials Transport

Hazardous materials are transported through Fairfield on a regular basis along the major transportation corridors. Interstates 80 and 680 in Fairfield and 780 and 505 in Solano County are all part of the national network for STAA trucks (Surface Transportation Assistance Act, which regulates large trucks), which are used for the transportation of hazardous materials. In addition, the Southern Pacific Railroad (SPRR), a major rail line bisecting Fairfield, transports hazardous materials both to local industry and to other cities. The City's Multi-Hazards Disaster plan outlines the procedures and agencies involved in responding to hazardous materials spills on highways and railways. Planning concerns focus on setbacks for residential uses and immobile populations from major transportation corridors such as the interstates and rail lines. Risk associated with the transport of hazardous materials can be reduced by promoting industries which utilize source reduction and on-site reuse and waste disposal of hazardous materials.

Emergency Preparedness

In 1987 the City of Fairfield prepared and adopted the Multi-Hazard Disaster Plan to guide emergency relief efforts in the event of a disaster. The plan is required by the State for those communities wishing to be eligible for disaster funding. The plan includes provisions for all City services during anticipated disasters and outlines evacuation plans, emergency response guidelines, and other operating procedures. With acceptance of this plan by the State, the City's Department of Public Safety will be prepared to respond to anticipated disaster events.

The plan addresses the City of Fairfield's response to extraordinary emergency situations associated with natural disasters, technological incidents, and nuclear defense operations. The plan describes the responsibilities of the emergency management organizations. Emphasis of the Plan is placed on emergency planning, coordination with Federal, State, and local agencies, training of emergency relief personnel (full-time, volunteer, and reserve), and public awareness and education. It also addresses mitigation measures to reduce losses from disasters, including land use, design, and construction regulations.

Noise

The purpose of the Noise Element is to provide information and mechanisms to mitigate existing noise conflicts and to minimize future noise conflicts.

State Policy and Authorization

The contents of a Noise Element are governed by Section 65302(f) of the California Government Code, and by the Noise Element Guidelines published in 1987 by the California Office of Planning and Research (OPR). The OPR Guidelines require the community to identify both major noise sources and areas sensitive to noise levels. These areas are to be mapped via generalized noise exposure contours for existing and projected conditions. Noise levels are to be described in terms of either Community Noise Equivalent Level (CNEL) or the Day-Night Average Sound Level (L_{dn}). Both measures are descriptors of total noise exposure at a given location for an annual average day.

The use of CNEL, which requires special consideration of evening hours, introduces additional complexities in calculations and uncertainty in data collection as compared to the Day-Night Level (L_{dn}), which typically is within 1 dB of the CNEL in a given situation. (The L_{dn} is employed in State regulations and Federal guidelines, and its use is recommended by the State Noise Element Guidelines.) Thus, the CNEL descriptor could be supplemented with the simpler L_{dn} descriptor with no significant adverse consequences.

Another common noise descriptor is the Equivalent Sound Level (L_{eq}). This is a measurement of the average sound level, typically over a one-hour period.

The noise exposure information developed for the Noise Element is to be incorporated into the General Plan to serve as a basis for achieving land use compatibility within the community. Further, the noise exposure information is to be used to provide baseline levels for use in the development and enforcement of a local noise control ordinance. The Noise Element does not apply to workplace noise exposures, which are regulated by Federal and State agencies.

Relationship to the General Plan

The Noise Element is related to the Land Use, Housing, Circulation and Open Space Elements of the General Plan. Recognition of the interrelationship of the Noise Element and these four mandated elements is necessary to prepare an integrated general plan. The relationship between these elements is briefly discussed below:

Land Use

An objective of the Noise Element is to provide noise exposure information for use in the Land Use Element. When integrated with the Noise Element, the Land Use Element will show acceptable land uses in relation to existing and projected noise levels.

Housing

The Housing Element considers the provision of adequate sites for new housing and standards for housing stock. Since residential land uses are noise-sensitive, the noise exposure information of the Noise Element must be considered when planning the locations of new housing. The State Noise Insulation Standards may influence the locations and construction costs of multi-family dwellings, which should be considered by the Housing Element.

Circulation

The circulation system, which is a major source of noise, must be correlated with the Land Use Element. Noise exposure will thus be a decisive factor in the location and design of new transportation facilities, and in the mitigation of noise produced by existing facilities upon existing and planned land uses.

Open Space

Excessive noise can adversely affect the enjoyment of recreational pursuits in designated open space, particularly in areas where quiet is a valued part of the recreational experience. Thus noise exposures should be considered in planning

for this kind of open space use. Conversely, open space can be used to buffer noise-sensitive uses from noise sources by providing setbacks and screening.

Existing Noise Conditions in Fairfield

Exhibits HS-3 and HS-4 depict the existing noise environment in the planning area. This noise environment is defined primarily as vehicular traffic on highways and arterial roadways, operations on the Southern Pacific Railroad, and aircraft operations at Travis Air Force Base. Industrial noise sources also contribute to the noise environment, but to a lesser extent. These noise sources were quantified by a combination of noise measurements, review of existing noise literature, and application of accepted modeling techniques. A community noise survey was also performed to evaluate existing noise levels in residential sections of the planning area.

Sensitive Land Uses

Noise-sensitive land uses in the Fairfield planning area were considered to include residential areas, schools and parks. Hospitals, auditoriums, churches and meeting facilities are noise sensitive land uses for interior noise levels, but are generally not as sensitive to exterior noise as land uses without outdoor activity areas. In some cases, office uses may be considered noise sensitive land uses for interior noise levels. The community noise survey results indicate that typical noise levels in noise sensitive areas of the City of Fairfield range from 50 dB to 55 dB L_{dn}.

Travis Air Force Base Noise

The Travis Air Force Base (AFB) Air Installation Compatible Use Zone (AICUZ) study is an evaluation of the noise and accident potential environment in the air base vicinity, and is designed to be used in the planning process to ensure that the safety and operational capabilities of Travis AFB are preserved. A Comprehensive Airport Land Use Compatibility Plan (LUCP) was prepared for the Solano County Airport Land Use Commission (ALUC) with comprehensive land use planning policies and guidelines intended to protect the safety and general welfare of people in the vicinity of the Air Base and assure the safety of air navigation. The noise contours for the LUCP were prepared in terms of CNEL and are included in Exhibit HS-3.

Travis Aero Club Noise

The Land Use Compatibility Plan for the Travis Aero Club was prepared for the ALUC to assure that future development of adjacent property remains compatible with Aero Club aircraft activity. The Compatibility Zones included in the Compatibility Plan incorporate noise impacts for the Aero Club.

Railroad Noise

Railroad activity in Fairfield consists of Amtrak and freight activity on the east/west Southern Pacific Railroad trackage. Based upon the measured single event noise levels and the operational information provided by the railroad company, the L_{dn} due to railroad operations was calculated to be 76 dB at a reference distance of 100 feet from the railroad centerline.

Vehicular Traffic Noise

Interstate 80, State Route 12 and the major arterial roadways are major contributors to the existing noise environment in the Plan Area. The distance to the existing 65 dB L_{dn} noise contours for I-80 and SR-12 were computed to be about 800 feet and 270 feet respectively.

Industrial and Other Noise Sources

Noise is inherent in many industrial processes, even when the best available noise control technology is applied. Noise production within an industrial facility is controlled by Federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise emissions from industrial operations have the potential to exceed locally acceptable standards for noise sensitive land uses.

From a land use planning perspective, industrial noise control issues focus upon two objectives. The first is to prevent the introduction of new noise-producing uses in a noise sensitive area. The second is to prevent encroachment of noise sensitive uses upon existing industrial facilities. The first objective can be achieved by applying noise performance standards to proposed new industrial uses. The second objective can be met by requiring that new noise sensitive uses in proximity to existing industrial facilities include mitigation measures to ensure compliance with noise performance standards.

Exhibit HS - 1

Geologic Hazards

Slope Stability Zones

2 — Slopes of 5% or greater which generally contain few, usually small landslides. This zone is mapped in the generally resistant rocks of the Sonoma Volcanics.

3 — Slopes of 5% or steeper which contain occasional to moderate numbers of landslides. The landslides are often concentrated in relatively small areas. This zone is generally mapped in the well-bedded Great Valley sedimentary rocks.

4 — Slopes of 5% or greater, which contain many to very many landslides. This zone is mapped in the gentle, rolling hills west of I-680 which are generally composed of the Markley Sandstone.

Faults

Known active faults, showing Alquist-Priolo Special Study Zones

Faults not known to be active

Fault under consideration for inclusion in Alquist-Priolo Special Study Zone

City of Fairfield
General Plan

0 1 2 3 Miles

NORTH

Exhibit HS - 2

Fire Hazards

Extreme wildfire risk areas:

chaparral, dense woodland, steep slopes, poor access, winds

High wildfire risk areas:

woodland-grassland, grassland, steep slopes, poor access, winds

High grassfire risk areas:

grassland, grazing, hilly, winds

City of Fairfield
General Plan

0 1 2 3 Miles

NORTH

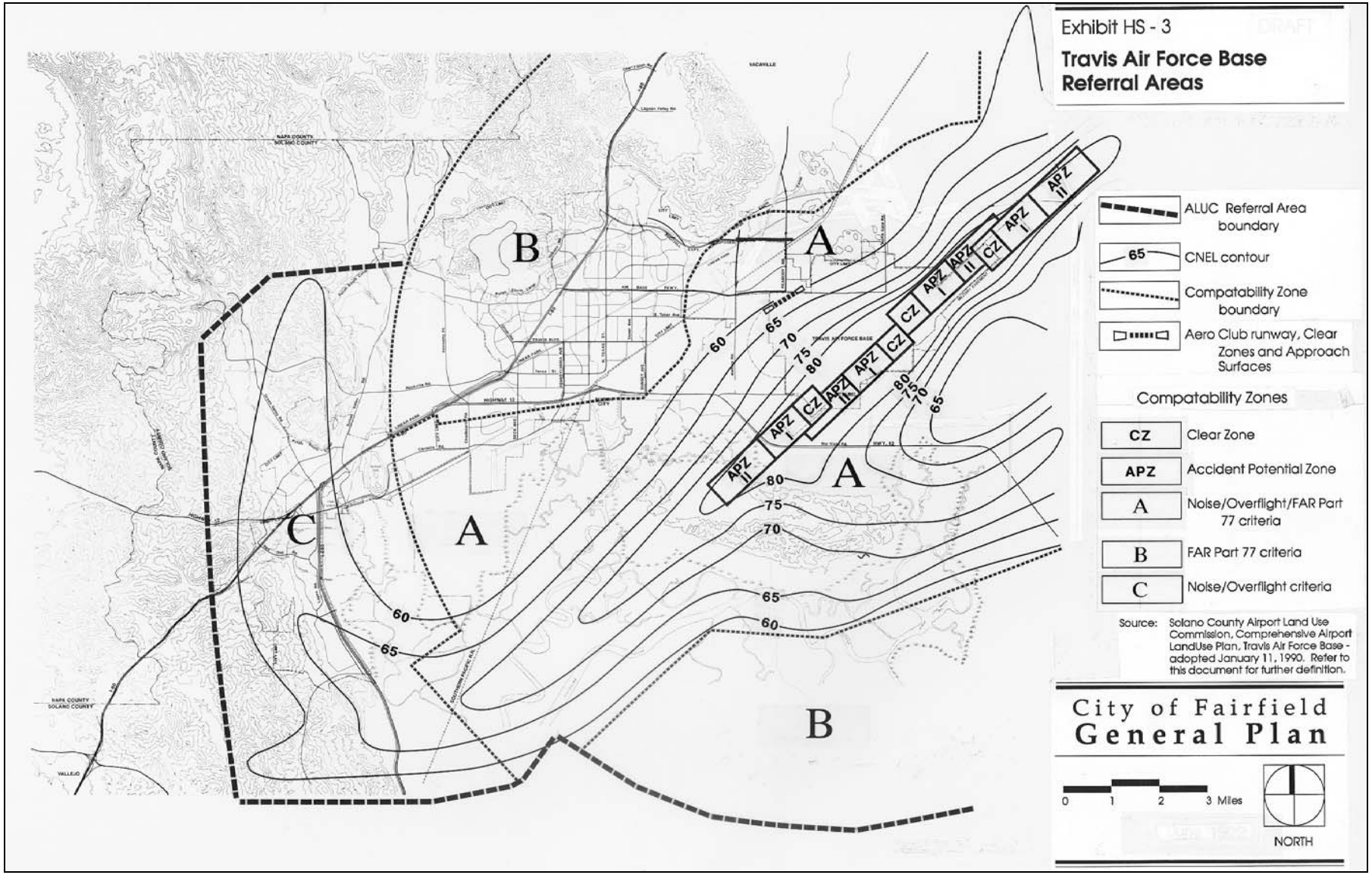


Exhibit HS - 3
Travis Air Force Base
Referral Areas
ALUC Referral Area boundary
65 CNEL contour
Compatability Zone boundary
Aero Club runway, Clear Zones and Approach Surfaces
Compatability Zones
CZ Clear Zone
APZ Accident Potential Zone
A Noise/Overflight/FAR Part 77 criteria
B FAR Part 77 criteria
C Noise/Overflight criteria
Source: Solano County Airport Land Use Commission, Comprehensive Airport LandUse Plan, Travis Air Force Base - adopted January 11, 1990. Refer to this document for further definition.
City of Fairfield
General Plan
0 1 2 3 Miles
NORTH
A
B
C
APZ II
APZ I
CZ
60
65
70
75
80

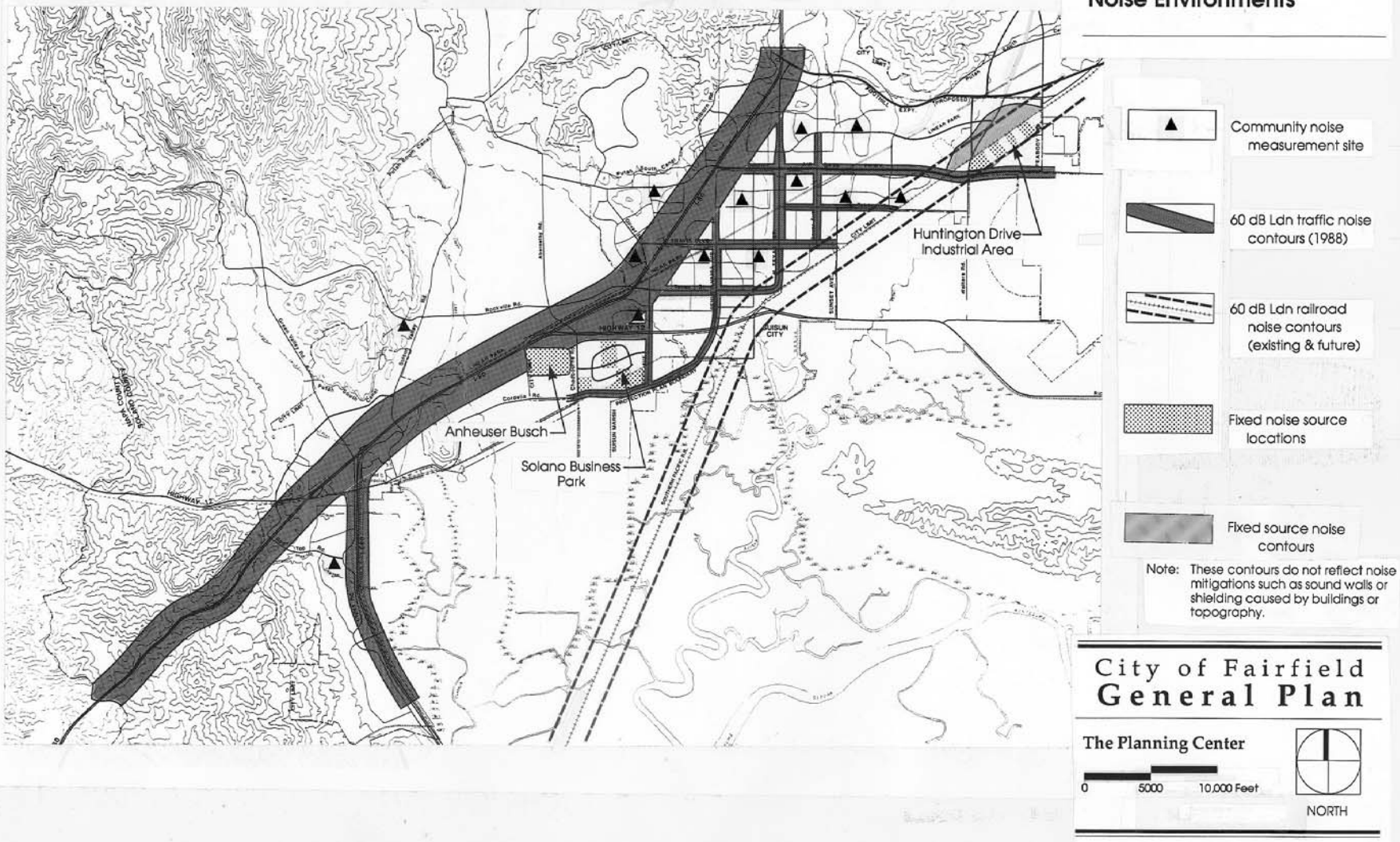
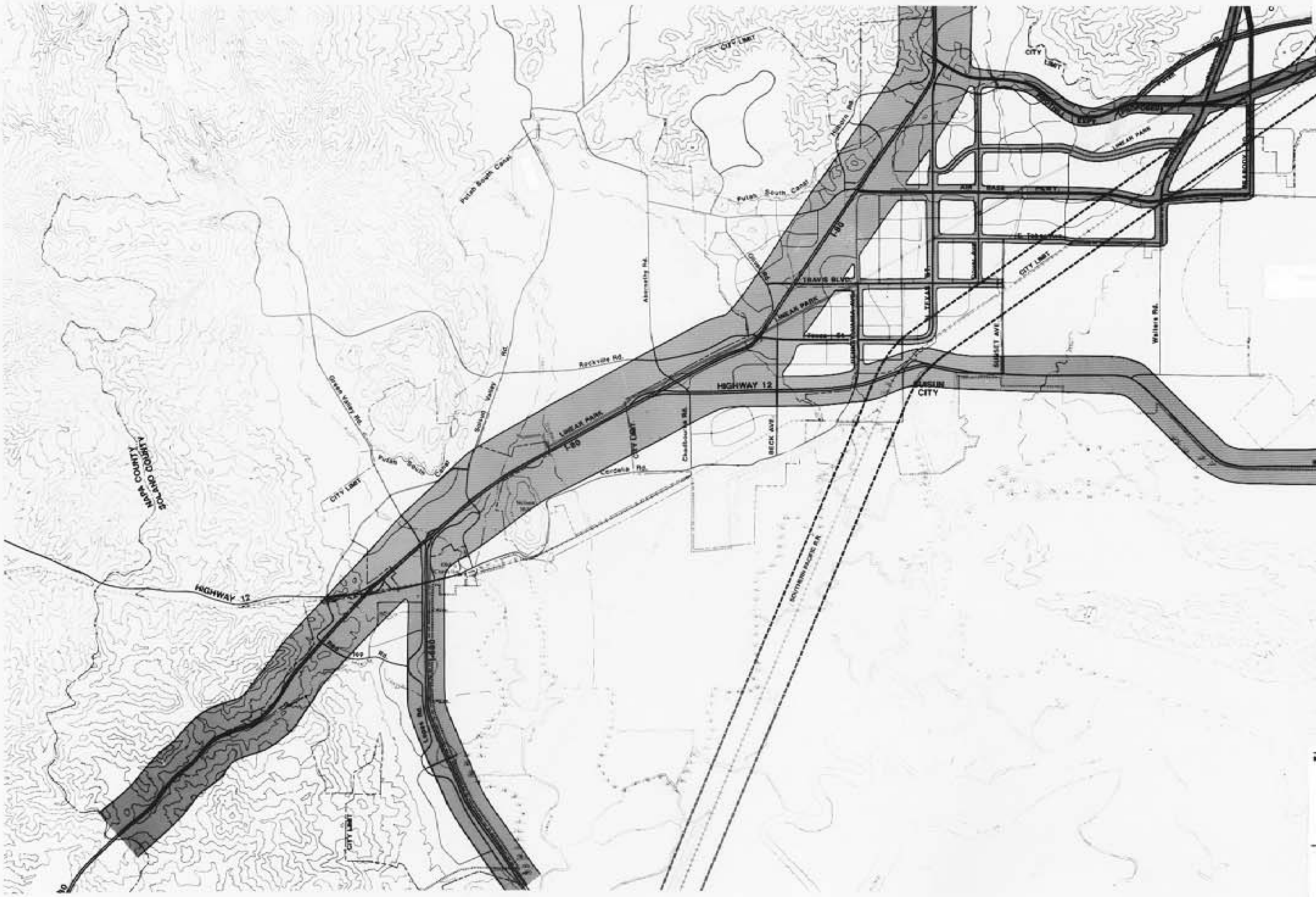


Exhibit HS - 4
DRAFT
Noise Environments
Community noise measurement site
60 dB Ldn traffic noise contours (1988)
60 dB Ldn railroad noise contours (existing & future)
Fixed noise source locations
Fixed source noise contours
Note: These contours do not reflect noise mitigations such as sound walls or shielding caused by buildings or topography.
Huntington Drive Industrial Area
Anheuser Busch
Solano Business Park
City of Fairfield
General Plan
The Planning Center
0
5000
10,000 Feet
NORTH

Exhibit HS - 5

Future Roadway and Railroad Noise



60 dB L_{dn} traffic noise contours

60 dB L_{dn} railroad noise contours

Note: These contours do not reflect noise mitigations such as sound walls or shielding caused by buildings or topography.

The final alignment of the Walters Rd. extension will occur within the Study Area Corridor. The Noise Contours shown for the Walters Rd. extension will follow the final Walters Rd. alignment.

City of Fairfield
General Plan

Brown-Buntin Associates

0 5000 10,000 Feet

NORTH